

NEW MEMBRACIDÆ FROM CHINA AND JAPAN.*

BY W. D. FUNKHOUSER.

Leptobelus decurvatus sp. nov. (Figs. 1 and 2).

Near *Leptobelus gazella* Fairmaire and *Leptobelus dama* Germar but differing from both in color, in the shape of the pronotal column and in the position of the posterior process.

Large, slender, pronotum dark brown, tegmina smoky-hyaline; suprahumeral horns extending almost directly outward; posterior process strongly decurved, extending almost as far as tip of abdomen and almost touching internal margins of tegmina; undersurface of body dark brown; legs ferruginous-brown.

Head wider than long, dark brown, roughly sculptured, coarsely punctate, sparingly pubescent; basal margin sinuate; eyes large, brown, mottled, prominent; ocelli large, prominent, reddish, somewhat protruding, farther from each other than from the eyes and situated slightly above a line drawn through centers of eyes; inferior margins of genæ sinuate, flanged, the edge distinctly turned outward; clypeus long, narrow, more than twice as long as wide, extending for more than twice its length below the inferior margins of the genæ, brown, punctate, pubescent, a longitudinal ridge on each side median line, tip acute and pilose.

Pronotum dark brown, lighter in front, almost black on posterior process, closely and coarsely punctate, sparingly pubescent with grayish hairs; anterior pronotal process erect, turriculate, the apex giving rise to two long, pointed suprahumeral horns and the long, slender, strongly decurved posterior process; metopidium nearly perpendicular, twice as wide at humeral angles as at base of horns, strongly centrally carinate; median carina strongly percurrent; humeral angles prominent, triangular, blunt; suprahumeral horns long, sharp, triangular at base, carinate before, behind and below, black, punctate, extending almost directly outward, tip slightly bent downward and backward, apex acuminate; posterior process long, decurved, slender, the base remote from scutellum and arising from a point on the anterior process as high as the suprahumeral horns, the tip sharp, extending backward almost as far as the end of the abdomen and bent downwards to nearly touch the tegmina; scutellum entirely

* Contribution from the Zoölogy Laboratory of the University of Kentucky.

exposed, longer than broad, base swollen, apical half flat, tip rounded, very slightly notched in middle at extremity.¹

Tegmina very long, wrinkled, uniformly smoky-hyaline; base narrowly ferruginous-brown and punctate; veins prominent and reddish, sparingly pilose; tip rounded; five apical cells. Hind wings hyaline with four apical cells.

Undersurface of body uniformly dark brown, punctate rather densely pubescent with grayish hairs; abdomen black, the segments narrowly margined with ferruginous; legs entirely ferruginous-brown.

Length to tips of tegmina 9 mm.; width between extremities of humeral angles 2.8 mm.; width between tips of suprahumeral horns 6.6 mm.

Type: Female. Type locality: Kiautschau, China.

Described from three females and three males from Kiautschau, China, one female from Kinkiang, China, and one female from Sikkim, India. Type, allotype and paratypes in author's collection.

***Centrotypus laticornis* sp. nov.** (Figs. 3 and 4).

Near *Centrotypus flexuosus* Fabr., but larger and differing particularly in the much wider spread and different shape of the suprahumeral horns.

Large, blue-black, very coarsely punctate, sparingly pubescent; distance between tips of suprahumeral horns greater than length of body including tegmina; posterior process extending far beyond tip of abdomen but not reaching apices of tegmina; tegmina smoky-hyaline with costal margins black; undersurface of body black; legs black-brown except tarsi which are ferruginous-brown.

Head wider than long, roughly sculptured, black, finely punctate, sparingly pubescent; basal margin convex in center, depressed at sides; eyes very large, prominent, gray; ocelli large, prominent, gray, a very little farther from each other than from the eyes and situated slightly above a line drawn through centers of eyes; inferior margins of genæ smooth, somewhat convex, slightly flanged; clypeus twice as long as wide, black, finely punctate, densely pubescent except for a smooth linear area on each side of median line, extending for

¹ Distant has given as a character for his division *Micreunaria* (Fauna of British India, Vol. IV: p. 14. 1907) the description of the scutellum as being "apically acuminate." This does not hold for a number of species of *Leptobelus* (e.g., the above) nor of *Telingana* (e.g., *T. balteatus* Dist.).

more than half its length below the inferior margins of genæ, tip rounded, slightly protruding and pilose.

Pronotum blue-black, very closely punctate, sparingly pubescent, the pubescence being more dense just above the head and on posterior bases of suprahumeral horns; metopidium about as wide as high, constricted just above head and then swollen to the bases of suprahumeral horns, convex in front, flattened between horns; median carina percurrent, well defined behind horns but faint over metopidium; humeral angles broad, triangular, blunt, situated well back of eyes; suprahumeral horns very long, more than twice as long as the distance between their bases, blue-black, coarsely punctate, not pubescent, much flattened dorso-ventrally, very wide as seen from above, extending outward, upward and backward in a gradual curve, the tips gradually acute, foliaceous (not obliquely truncate as in *C. flexuosus*), a strong carina on both upper and under surfaces extending the full length of the horn just before posterior margin; posterior process long, heavy, tricarinate, blue-black, coarsely punctate, not pubescent, base slightly elevated above scutellum, tip somewhat decurved, impinging on tegmina and extending far beyond end of abdomen but not reaching tips of tegmina; scutellum plainly visible at sides, black, finely punctate and densely pubescent.

Tegmina long, rather narrow, smoky-hyaline except at base where the costal area is blue-black for more than half the length of the tegmina and of the width of the two basal costal cells; veins prominent, upraised, ferruginous except along costal margin on which the two external veins are black; base narrowly black-brown and punctate; tip rounded and slightly tinged with ferruginous; five apical cells; the two basal costal cells ending at about the same distance from the base.

Undersurface of thorax brown-black, densely and finely pubescent; abdomen black, finely pubescent below; legs black-brown except tarsi which are ferruginous-brown.

Length including tegmina 11 mm.; width between tips of humeral angles 4 mm.; height of metopidium 2.5 mm.; distance between extremities of suprahumeral horns 12 mm.

Type: Female (from the Kirkaldy Collection). Locality: Riviere Claire, Haut-Tonkin, Madon.

Type in author's collection.

Pantaleon brunneus sp. nov. (Figs. 5 and 6).

Near *P. montifer* Walker, the type of the genus, but larger, and differing in color and in the shape of the posterior elevation.

Large, heavy-bodied, uniform brown with foliaceous markings of ferruginous on the posterior elevation; suprahumeral horns bifid, the anterior branch much the larger; posterior elevation longer than high, higher in front than behind, extending slightly beyond internal angles of tegmina; tegmina brown, opaque, slightly lighter in color at apices, tips decidedly pointed; legs and undersurface of body uniform brown.

Head about as long as wide, roughly sculptured, uniformly dark brown, finely punctate, densely pubescent with grayish hairs, base sinuately convex; eyes wider than high, light brown, not prominent; ocelli small, light brown, not conspicuous, about equidistant from each other and from the eyes and situated about on a line drawn through centers of eyes; inferior margins of genæ sinuate, sloping, angular just below eyes; clypeus about as long as wide, brown, punctate, pubescent, the lateral margins continuing in a nearly straight line the line of the inferior margins of the genæ, tip blunt and somewhat pilose.

Pronotum brown, roughly sculptured, finely punctate, rather densely pubescent; metopidium about as broad as high, perpendicular above the head, swollen along median line; median carina strongly percurrent; humeral angles large, prominent, blunt; suprahumeral horns very heavy, thick, irregular, considerably longer than the distance between their bases, extending upward, outward but not forward, the tips slightly bent backward, extremity bifid, the anterior prong much larger, longer and heavier than the posterior, centers of lateral margins roughly ridged; posterior process short, heavy, suddenly acuminate, bearing in the center a high elevated disc, this disc longer than high, laterally compressed, the anterior margin almost perpendicular, the dorsal and posterior margins rounded, the sides marked with irregularly branching ferruginous lines; tip of posterior process sharp and extending just beyond internal angles of tegmina; scutellum narrowly visible on each side.

Tegmina brown, opaque, slightly lighter in color along internal apical margin; veins prominent, somewhat upraised; base brown, coriaceous, punctate and sparingly pubescent; tip decidedly acute.

Legs and undersurface of body uniformly brown; tibiae and tarsi minutely spined.

Length to tips of tegmina 7 mm.; width between apices of suprahumeral horns 3.5 mm.

Type: Female. Locality: Kiautschau, China.
Type in author's collection.

***Pantaleon dorsalis* Matsumura.**

1912. *Centrotus dorsalis* Mats. Die Cicadinen Japans, p. 18.

It is evident from the original description² that this insect should be placed in the genus *Pantaleon* which Distant has erected³ for the reception of *Centrotus montifer* Walker. Professor Matsumura's description of the "gegabelt" suprahumeral and the "halbkreisformig" posterior process (which perhaps suggested the specific name) shows that the species cannot be a true *Centrotus* and leaves little doubt as to its position in *Pantaleon*.

***Antialcidas erectus* sp. nov. (Figs. 7 and 8).**

Entirely ferruginous except head, lower half of metopidium and undersurface of horns which are ferruginous-brown; suprahumeral horns tricarinate, extending outward and upward, each horn about as long as the distance between their bases; posterior elevation very high, subtriangular, laterally compressed; tegmina ferruginous, semiopaque, pointed at tips; legs and undersurface of body ferruginous.

Head somewhat wider than long, subquadrate, ferruginous-brown, finely punctate, sparingly pubescent; base sinuately convex; eyes wider than high, gray, not prominent; ocelli small, glassy, not prominent, about equidistant from each other and from the eyes and situated well above a line passing through centers of eyes; inferior margins of genæ nearly straight, sloping downwards from eyes, angular below eyes; clypeus longer than wide, extending for about half its length below inferior margins of genæ, lateral margins continuing in an almost straight line the line of the inferior margins of genæ, tip rounded, deflexed, pilose.

Pronotum ferruginous, darker at base of head and below suprahumeral, finely punctate, sparingly pubescent with grayish hairs; metopidium wider than high, perpendicular above the head, upper half ferruginous, lower half dark ferruginous-brown; median carina strongly percurrent; humeral angles triangular, blunt, not prominent; suprahumeral horns

² Matsumura, S., "Die Cicadinen Japans II," *Annotationes Zoologicae Japonenses*, Vol. VIII, Part 1, p. 18, No. 5.

³ Distant, W. L., "Rhynchotal Notes—LIX," *Annals and Magazine of Natural History*, Ser. 8, Vol. XVII, p. 327, April, 1916.

strong, heavy, simple, tricarinate, about as long as the distance between their bases, extending outward and upward with the tips suddenly bent outward; posterior process short, bearing above a high triangular crest, this crest much compressed laterally, the front margin almost vertical, hind margin sloping, crest almost twice as high as horns, tip of posterior process acute; scutellum narrowly exposed at sides.

Tegmina ferruginous, slightly lighter at internal apical margin; semiopaque throughout; base coriaceous, punctate, sparingly pubescent; tip decidedly pointed; four apical cells.

Legs and undersurface of body uniformly ferruginous; sides of thorax densely pubescent; tibiae finely spined and pilose.

Length to tips of tegmina 6.5 mm.; width between extremities of suprahumeral horns 4.7 mm.

Type: Female. Locality: Kiautschau, China.

Type in author's collection.

The difference between the genera *Pantaleon* and *Antialcidas* seems to lie almost entirely in the structure of the suprahumeral horns; those in the insects belonging to the former genus being bifid while in the latter they are simple. The wing venation in the two genera is apparently identical.

Maurya angulatus sp. nov. (Figs. 9 and 10).

Brown mottled with blackish, punctate, pubescent; suprahumeral horns short, blunt, extending outward and forward, no longer than the distance between their bases; posterior process bearing a rather high, compressed dorsal ridge, the posterior margin of this ridge continuing the line made by the interior apical margins of the tegmina; tegmina brownish, subhyaline, tip decidedly pointed.

Head wider than long, roughly sculptured, sordid brown, the fine punctuation almost entirely hidden by the dense pubescence; base sinuately convex; eyes large, prominent, gray; ocelli small, glassy, not prominent, about equidistant from each other and from the eyes and situated above a line drawn through centers of eyes; inferior margins of genae sinuate, flanged; clypeus longer than wide, extending for about half its length below inferior margins of genae and nearly continuing the outlines of these margins.

Pronotum brown, somewhat mottled with irregular blackish patches, finely punctate, densely pubescent with grayish or silvery hairs, very roughly sculptured; metopidium decidedly wider than high, much swollen in center, slightly pro-

truding at base of head, sunken below horns; median carina strongly percurrent; humeral angles small, blunt, not prominent; suprahumeral horns short, blunt, auriculate, no longer than the distance between their bases, extending outward and forward but not higher than the crest of dorsum, somewhat compressed dorso-ventrally, tips rounded; scutellum narrowly exposed on each side; posterior process heavy, elevated into an angular compressed crest in center, impinging on tegmina, posterior margin, as seen from the side, continuing the line of the internal apical margins of tegmina, tip acute and reaching just to internal angles of tegmina.

Tegmina translucent brownish mottled with irregular darker flecks; veins prominent, brown, finely pubescent; base coriaceous, punctate, pubescent; tip narrowed, acute, somewhat tinged with ferruginous.

Legs and undersurface of body uniform sordid brown; sides of thorax densely pubescent; tibiae densely pilose.

Length to tips of tegmina 6.2 mm.; width between tips of suprahumeral horns 3 mm.

Type: Female. Locality: Kiautschau, China.

Described from three females. Type and paratypes in author's collection.

***Maurya brevicornis* sp. nov.**

Near the preceding but with the suprahumeral horns very much shorter, the posterior process more uniformly elevated and the tegmina almost entirely hyaline.

Small, brown, punctate, pubescent; suprahumeral horns very short and blunt, not extending outward as far as the humeral angles; posterior process only slightly higher at posterior angle than at base; tegmina almost entirely hyaline except at base where it is brown and opaque.

Head wider than long, subquadrate, roughly sculptured, very dark brown, finely punctate, densely pubescent; base strongly sinuate, convex; eyes large, brown, prominent; ocelli small, pearly, conspicuous, slightly farther from each other than from the eyes and situated well above a line drawn through centers of eyes; inferior margins of genae rounded; clypeus more than twice as long as wide, extending for two thirds its length below inferior margins of genae, tip broadly rounded and densely pilose.

Pronotum castaneous-brown, darker near head, finely punctate, densely pubescent with golden hairs; metopidium wider than high, very roughly sculptured, depressed above eyes and at bases of suprahumeral horns, swollen in center,

protruded at base of head, somewhat darker in color on lower third; median carina strongly percurrent; humeral angles large, prominent, blunt, extending outward farther than the suprahumeral horns above them; suprahumeral horns short, heavy, blunt, roughly tricarinate, extending directly outward, not at all forward or upward, not reaching as far laterad as the tips of the humeral angles nor farther dorsad than the crest of the dorsum; scutellum well exposed on each side, much darker in color than the pronotum above, finely punctate, sparingly pubescent; posterior process impinging on tegmina, strongly and uniformly elevated in middle to form a high compressed ridge, the dorsal line of this ridge nearly straight, the posterior margin continuing the line of the internal apical margin of tegmina, posterior angle marked with black, tip gradually acute and just reaching internal angles of tegmina.

Tegmina hyaline, much wrinkled, iridescent; veins prominent, brown, somewhat upraised, sparingly pubescent; base narrowly brown, coriaceous, punctate, pubescent; tips decidedly pointed, slightly tinged with brown; marginal membrane very narrow.

Undersurface of thorax uniformly dark brown; sides of thorax densely pubescent with long matted grayish hairs; undersurface of abdomen black and punctate; legs ferruginous-brown.

Length to tips of tegmina 6 mm.; width between tips of humeral angles (which is the maximum width of the body) 2.9 mm.

Type: Female. Locality: Harima, Japan.

Described from two females collected at Harima in May, 1916. Type and paratype in author's collection.

Sarritor attenuatus sp. nov. (Fig. 11).

Long, narrow; pronotum black; tegmina smoky-hyaline except base which is black and punctate; suprahumeral horns long, sharp, extending outward, upward and backward; posterior process absent; scutellum entirely exposed.

Head wider than long, black, finely punctate, rather densely pubescent with golden hairs; base high and sinuate; eyes large, prominent, yellow mottled with black, visible from above; ocelli small but very conspicuous on account of their bright yellow color, opaque, a little farther from each other than from the eyes and situated about on a line drawn through centers of eyes; inferior margins of genæ sinuate; clypeus longer than wide, projecting for about half its length below inferior margins of genæ.

Pronotum black, finely punctate, sparingly pubescent; metopidium about as wide as high, nearly perpendicular; humeral angles large, prominent, triangular, blunt; median carina distinctly percurrent; suprahumeral horns about as long as the distance between their bases, extending upward, outward, and slightly backward, tips sharp and recurved; sides of pronotum hollowed out behind horns and before humeral angles allowing the eyes to be seen from above; posterior process not present; scutellum entirely exposed, slightly broader than long, lateral margins projected into teeth, the central area strongly hollowed out; a dorsal triangle of the abdomen exposed between bases of tegmina.

Tegmina long, narrow, wrinkled, smoky-hyaline; base black and punctate; tips rounded; veins prominent and brown.

Undersurface of body black and pubescent; femora brown; tibiae flavous; tarsi luteous.

Length 6 mm.; width between tips of suprahumeral 3 mm.

Type: Female. Locality: Kiautschau, China.

Type in author's collection.

I should hesitate to describe this species from a single specimen, since the absence of a posterior process suggests the possibility of mutilation, were it not for the fact that the insect agrees in all particulars with the characters laid down by Distant for the genus *Sarritor*⁴ even to the peculiar hollowing out of the pronotum which allows the eyes to be seen from a dorsal view, and the unique concave center of the scutellum. The specimen shows no sign of mutilation. The wing venation is the same as that figured by Distant for *Sarritor retusus*, the type species of the genus.

***Tricentrus kuyanianus* Matsumura.**

1912. *Centrotus kuyanianus* Mats. Cicad. Jap., p. 10. No. 6.

Material from Hong Kong which agrees in all respects with Matsumura's description of *C. kuyanianus* shows the hind trochanters armed with spines, which character places the species in the genus *Tricentrus*.

***Gargara lata* sp. nov.**

Near *Gargara majuscula* Distant but smaller and differing particularly in the appearance of the tegmina.

⁴ Distant, W. L., "Fauna of British India," Vol. VI, App., p. 182.

Large, broad, robust, black, punctate and pubescent; metopidium strongly convex and elevated; tegmina entirely opaque, very dark brown mottled with black and ferruginous; suprahumeral horns absent; hind trochanters without spines.

Head nearly as long as wide, black, finely punctate, closely pubescent with short golden hairs; base very high and sinuate; eyes large, prominent, ferruginous; ocelli ferruginous, not conspicuous, about equidistant from each other and from the eyes and situated slightly above a line drawn through centers of eyes; margins of genæ sloping, slightly sinuate; clypeus about twice as long as wide, extending for half its length below inferior margins of genæ and almost continuing the line of these margins.

Pronotum very dark brown, nearly black, punctate, pubescent; metopidium much wider than high, elevated, convex; humeral angles prominent, triangular, acute; median carina percurrent; posterior process strong, heavy, slightly sinuate, tricarinate at apex, tip sharp and extending just beyond internal angles of tegmina; scutellum well exposed on each side.

Tegmina opaque, wrinkled, brown with darker patches; base brown, coriaceous, punctate, pubescent; tip rounded, ferruginous; veins strong, faintly pilose.

Legs and undersurface of body brown, punctate and densely pubescent; tibiæ minutely spined.

Length 6.6 mm.; width between tips of humeral angles 3.4 mm.

Type: Female. Locality: Kiautschau, China.

Type in author's collection.

EXPLANATION OF PLATE.

- FIG. 1. Lateral outline of *Leptobelus decurvatus* sp. nov.
- FIG. 2. Frontal outline of *Leptobelus decurvatus* sp. nov.
- FIG. 3. Lateral outline of *Centrotypus laticornis* sp. nov.
- FIG. 4. Frontal outline of *Centrotypus laticornis* sp. nov.
- FIG. 5. Lateral outline of *Pantaleon brunneus* sp. nov.
- FIG. 6. Frontal outline of *Pantaleon brunneus* sp. nov.
- FIG. 7. Lateral outline of *Antialcidas erectus* sp. nov.
- FIG. 8. Frontal outline of *Antialcidas erectus* sp. nov.
- FIG. 9. Lateral outline of *Maurya angulatus* sp. nov.
- FIG. 10. Frontal outline of *Maurya angulatus* sp. nov.
- FIG. 11. Lateral outline of *Sarritor attenuatus* sp. nov.
- FIG. 12. Lateral outline of *Gargara lata* sp. nov.